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PSYCHE

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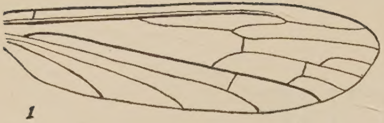
NEW NORTH AMERICAN DIPTERA.

By Charles W. Johnson,

Boston Society of Natural History, Boston, Mass.

In the genus Cylindrotoma there is considerable variation in the venation of both species and individuals. The three specimens of *C. distinctissima* Wiedemann received from Herr. M. P. Riedel show very little variation, the second posterior cell is of almost uniform length (Fig. 1). The figure shown by Prof. J. G. Needham of "*C. distinctissima* Meigen, after van der Wulp" (N. Y. State Museum, bull. 124, pl. 15, fig. 4, 1908) does not represent the species. In *C. americana* O. S. the two specimens before me from Capens, Moosehead Lake, Maine, July 11, 1907, have the second posterior cell the same length as the third (Fig. 2). Regarding the venation of *C. splendens* Doane (Fig. 5 after Doane) he says:—"Submarginal cell either longer or shorter than the first posterior cell. In two of my specimens it is longer in one wing and shorter in the other." In *C. juncta* Coq. the base of the second posterior cell is slightly before the base of the third. *C. tarsalis* sp. nov. (Fig. 4) has normally a venation similar to *C. distinctissima*, but there are many abnormalities. Among the fourteen specimens, four have the second posterior cell as long as the third in one or both wings; one has the vein M^1 obsolete with only a slight indication of the vein at the margin; another specimen has a very abnormal venation, in one wing a small cell is present at the base of the submarginal and first posterior cells, extending from the marginal cell to and partly over the base of the discal cell; the junction of vein M^1 is imperfect in both wings. In *C. anomala* sp. n. (Fig. 3) the first posterior cell is petiolate and the anterior cross-vein extends to the petiole.



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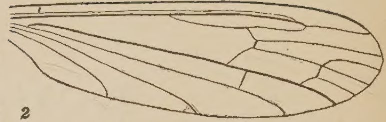

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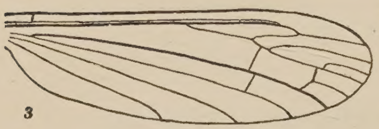

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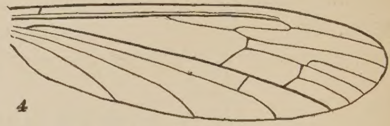

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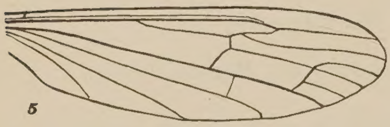

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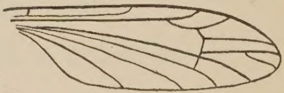

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Cylindrotoma tarsalis sp. nov. (Figure 4.)

Male. Front and occiput black, with a slight grayish pollen; rostrum and palpi yellow, tips brown, the three basal joints of the antennæ entirely light yellow, flagellum brown, densely pubescent, the joints slender and not contracted at the ends. Thorax light yellow, with three narrowly separated opaque black stripes, the dorsal one extending from the collar to the transverse suture, the lateral stripes begin at the middle of the dorsal stripes, curving inward beyond the suture, and extending nearly to scutellum; pleuræ light yellow; a brown spot above the front coxæ, another between the front and middle coxæ, and also at the base of the halteres; scutellum and metanotum yellow, the latter bearing two faint brown spots. Abdomen brown, a wide dorsal line, venter and genitalia yellowish. Coxæ yellow, femora, tibiæ and metatarsi dark brown, the remainder of the tarsi (except the extreme tip) yellowish white. Halteres infuscated above, yellowish below. Wings grayish hyaline, covered with minute hairs, stigma obsolete, veins brown and hairy. Length 8 mm.

Fourteen specimens, Woodworth's Lake, Bleecker, N. Y., August 19, 1909. Holotype and six paratypes in the author's collection. The remaining paratypes returned to the collector, Charles P. Alexander.

Cylindrotoma (?) anomala sp. nov. (Figure 3.)

Male. Very similar to *C. tarsalis* in general appearance. The palpi are longer and the antennæ much shorter; the joints of the flagellum are irregular in size and more abruptly tapering. The stripes on the thorax are the same, the collar is slightly infuscated; the brown spot above the front coxæ is present, but the other spots of the pleuræ and metanotum are wanting. The abdomen is similar in color but the genitalia are much larger and of an entirely different structure, with prominent forceps and appendages. The legs have the same peculiar coloring of the tarsi but the wings have quite a different venation as shown in the figure. Length, 8 mm.

One specimen, Woodworth Lake, Bleecker, N. Y., August 19, 1909, collected by Charles P. Alexander.

This species is placed here provisionally awaiting more material. It seems strange that two species taken at the same time and place should resemble each other so closely in color. The five posterior cells would indicate its place in this genus, but the antennæ and genitalia are quite different from the typical Cylindrotoma.

Elliptera alexanderi sp. nov. (Figure 5.)

Male. Rostrum and palpi black, antennæ light yellow, the second and third joints globose, flagellum slender, verticils long, tip of the flagellum brown. Thorax yellow with three broad, brown stripes, the middle one obscurely divided before the suture; scutellum and metanotum brown, margined with yellow; pleuræ yellow with three brown longitudinal stripes, the upper one somewhat obsolete, the lower one broader than the others and extending over the bases of the coxæ. Abdomen brown, posterior margins of the segments and venter yellowish, genitalia large, yellow; tips of the appendages black. Legs yellow; the entire front femora, apex of the middle femora and a subapical band on the posterior femora dark brown; tibiæ and bases of the metatarsi whitish, bases and apices of the front and middle tibiæ, tips of the posterior tibiæ and all of the tarsi including the outer half of the metatarsi dark brown. Halteres yellow the knobs slightly infuscated. Wings hyaline with a slight brownish tinge, stigma brown with a light spot on each side, the costa and costal and subcostal cells white. Length, 4.5 mm. The female differs but little from the male. The front and middle metatarsi are entirely brown; the ovipositor entirely yellow.

Six specimens, Sport Island, Sacandaga River, N. Y., July 5, 1909, and August 24, 1910. Holotype and two paratypes in the author's collection; the others in the collection of the collector, Mr. Charles P. Alexander.

Leptis gracilis sp. nov.

Male. Front and occiput blackish, grayish pollinose, with two slight tubercles above the antennæ; ocelligerous tubercle black; eyes widely separated; palpi and antennæ yellow, aristæ black. Thorax yellow, with narrow somewhat obsolete stripes due largely to rows of fine black hairs; pleuræ and scutellum yellow. Abdomen slender, yellow, first segment with a black spot below the scutellum, the remaining segments with broad basal bands of black. Halteres and legs light yellow, a small black dot at the base of the femora on the inner side; tarsi somewhat brownish toward the tips. Wings hyaline, veins light brown, anal cell closed, with a short petiole extending to the margin. Length, 6 mm.

The female differs but little from the male except that the black on the first segment of the abdomen extends entirely across the base. The front is slightly wider and has three slight grooves, the tubercles are obsolete.

Six specimens *Holotype* and *Allotype.*—Amsden, Vt., July 10, 1908 (C. W. Johnson). *Paratypes.*—Mt. Ascutney, Vt., above 2,000 ft., July 11, 1908 (C. W. Johnson.) Mt. Greylock, Mass., August 8, 1907 (Owen Bryant). Types in the New England collection of the Boston Society of Natural History.

This interesting species is not a typical Leptis, for the eyes of the male are dichoptic. In form it resembles Dialysis, but the front tibiæ are without spurs and the hind tibiæ have two as in typical Leptis. The anal cell is closed, but the open anal cell is not a fixed character. Among twenty-six specimens of *L. mystacea* seven have the anal cell closed, as shown in Williston's Manual, 1908, p. 157, fig. 51, although the table on page 163 says open. This character also varies in *L. plumbea* (4 open and 3 closed) and *L. punctipennis* (2 open and 8 closed), one specimen has it open on one wing and closed on the other. A specimen of *L. albicornis* has the discal cells open.

Chrysopila davisi sp. nov.

Female. Head velvety black; antennæ black. Thorax black, covered with a dense golden yellow tomentum, similar to *C. thoracica* pleuræ, scutellum and the entire abdomen velvety black. Femora black, tibiæ and metatarsi light yellow; the remainder of the tarsi blackish. Halteres black. Wings smoky black. Length, 15 mm.

Two specimens collected by Mr. William T. Davis, Clayton, Georgia, "2,000–3,700 ft." June, 1900. *Holotype* in the author's collection. This species seems to be intermediate between *C. velutina*, Lw. and *C. thoracica* Fabr., the wings and abdomen are like the former and the thorax like the latter.

Nemotelus bonnarius sp. nov.

Male. Face shining black, facial projection moderate, proboscis double the length of the head, bent slightly beyond the middle; a small spot above the base of the antennæ; eyes sub-contiguous; antennæ black; thorax and scutellum black, with a small white spot on the humeri. Abdomen mostly white, the first segment black except at the posterior angles; second white except for a short anterior, central margin of black; third white except a small black spot at the anterior angle; fourth black, except for a narrow lateral and posterior margin, which is often interrupted posteriorly leaving a dorsal spot, fifth black, with a narrow lateral and posterior margin dorsally expanded; venter black with a large irregular white spot on the second, often extending onto the third segment. Femora black, tips of the femora and the greater part of tibiæ and tarsi white, middle of the posterior tibiæ black and of the front and middle tibiæ brown. Halteres white. Wings hyaline, veins light yellow, third vein furcate. Length, 5 mm.

Female. Front very broad with a small white spot at the lower end of the frontal orbits, narrowly separated from an elongated spot on the facial orbits; proboscis short and thick, bent near the middle. Abdomen black, with a small, white, dorsal spot on the posterior margins of the second, third, fourth and fifth segments, the lateral margins are narrowly margined with white, which often extends for some distance around the posterior angles.

Ten males and eight females, Farewell Creek, South Saskatchewan, August, 1907, collected by Mrs. Varah A. Armstrong. One male, Ramsey Co., Minn. *Holotype* and *Allotype* in the author's collection.

Allied to *N. kansensis* Adams, but distinguished by the greater amount of black on the abdomen of the male, which in *N. kansensis* is confined to the fifth segment. The female of the latter has a wider lateral margin and larger triangular spots on the abdomen.

Euparyphus greylockensis sp. nov.

Male. Face and inferior orbits black, a yellow, arrow-shaped mark on the side of the face, orbits with white pubescense; frontal triangle yellow, ocellar triangle and occiput black, ocelli yellow; antennæ black. Thorax black, sparsely covered with yellowish hairs; two spots, the humeri with stripes extending to the suture and the post-alar callosities, yellow; pleuræ black, with long white hairs, a large triangular spot just forward of the wing with a second spot between this and the middle coxa yellow. Scutellum yellow, the extreme base and tips of the spines black. Abdomen black and marked with yellow as follows: base of the first segment very narrowly margined; the third segment with oblique stripes, each scarcely one-third the width of the segment in length, extend from the posterior angles, between these and the middle of the segment are two small spots; fifth segment with a central marginal triangle; venter black, a spot on the lateral margin of the third, and the posterior margin of the fifth segment yellow. Femora black, tip of the femora, all of the tibiæ and the basal half of the tarsi yellow, the outer half of the tarsi and a band on the middle of the posterior tibiæ black. Halteres yellow. Wings hyaline, third longitudinal vein simple. Length, 6 mm.

One specimen, Mt. Greylock, Mass., August 8, 1907 (Owen Bryant). Type in the Boston Society of Natural History. Distinguished from *E. tetraspilus* Loew, by its yellow scutellum and peculiar abdominal markings. *E. bellus* Loew, is separated from *E. tetraspilus* by third longitudinal being forked.

NOTES ON PSYLLIDÆ: *LIVIA*.[1]

By Edith M. Patch.

As a preparation for work with New England Psyllids, it has been the good fortune of the writer to receive specimens from widely separated localities for systematic study. Much of this material has no data other than the locality and date of collection, and it is with the hope that host plant and other biological information may be added by collectors from time to time, that these meagre records are given as a beginning. Photographs of the wing, head and caudal segment are given for the most part instead of detailed description. In order to connect the published account with the specimens studied, the accession numbers of each specimen are given together with what data are available.

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[1] Papers from the Maine Agricultural Experiment Station: Entomology No. 51.

Livia maculipennis Fitch.

A brief description of this species is given by Thomas (1879), which is quoted as follows:—

"*Diraphia maculipennis*, Fitch. The Spotted-winged Diraphia.

"This is a smaller species than the preceding, being only about one-tenth of an inch long to the tips of the wings. It is of a tawny-red color, the thorax being shaded more or less with dusky; the antennæ have a broad black band near the tips. The fore-wings somewhat shorter and broader than in either of the preceding species; hyaline with a broad smoky band at the tips, a spot back of the shoulder, and some freckles near the margin, of the same color; the marginal and other veins all white, alternating with numerous black rings. The breast, blackish; legs, dusky or brownish."

The specimens examined by the writer agree with this description except that the wings vary from "hyaline with a broad smoky band at the tips" in the paler specimens to wings which are densely smoked over most of the surface, and that most of the specimens are larger than those recorded by Fitch. The white or colorless veins are in all specimens examined "alternating with numerous black rings."

Livia bifasciata Provancher (1890) appears from the description to be this species.

The nymph of this species has not yet been recorded.

Figs. 1, 6, and 8 give the wing, head, and cauda.

Lot 1339 Sub. 11. Two females lent by Dr. E. P. Felt with the data "Phoenicia N. Y. Aug. 25, 1904, Van Duzee collector, N. Y. S. Coll. (8)."

Lot 1347 Sub 26. One female lent by Dr. C. Gordon Hewitt with data "Brockville, Ont. Sept. 20, 1903. Collected by W. Metcalfe."

Lot 1440 Sub 3. Four females lent by Dr. W. E. Britton with data "New Haven, Conn. Collected by B. H. Walden, 13th May, 1911, 30th May, 1911, 26th June, 1910."

Lot 1348 Sub 1. One female and two males lent by Prof. C. P. Gillette with data "Colo. Agr. Coll. No. 2779."

LITERATURE.

1879 Thomas, C., Third Report (Illinois Eighth) p. 14. Description after Fitch. On Sweet Flag, *Acorus calamus.*

1890 Provancher, L., Faune Entomolog. du Canada et partic. de la prov. de Québec. Hemiptères. p. 307. (*Livia bifasciata* new species.)

1895 Mally, C. W., Proceedings Iowa Academy of Science for 1894, p. 153. Listed for Ames, Iowa.

1910 Smith, J. B., Insects of New Jersey, p. 108. Listed.

Livia vernalis Fitch.

Thomas (1879) describes this species as follows:—

"*Diraphia vernalis,* Fitch. The Vernal Diraphia or Jumping Plant-louse.

"Found upon the leaves of the pine during the greater part of the year, puncturing them and sucking their juices. They are of an orange-yellow or bright rust-red color, about (.15) one-seventh of an inch in length, with a square-flattened head, concave on its upper side, with a slight, impressed line along the middle of the front. The antennæ short and thread like, about as long as the head; their basal joints largest, and forming one-fourth of their entire length; the forewings thick and leathery, feebly transparent, dull, pale, brownish yellow; the breast coal-black and legs pale."

The Colorado specimens differ somewhat from those from Connecticut, the emarginate projections of the front of the head being smaller in the former and the second antennal joint being larger. These are both present in collections determined as *vernalis* by good authorities. In the absence of biological data it is perhaps best to indicate the Colorado material as variety a. for the present.

Livia saltatrix Provancher (1890) is possibly this species.

The nymph of this species has not yet been recorded.

Figs. 2, 5, and 9, illustrate wing, head, and caudal segment of variety a. Fig. 4 pictures the head of a Connecticut specimen. Fig. 10 pictures the cauda of Lot 1339 Sub 59.

Lot 1339 Sub 59. One male lent by Cornell University with data "*Livia vernalis* Fitch. Ag. Coll. Mich. 205. Cornell U. Lot 157 Sub. 38. Received by exchange from Carl F. Baker."

Lot 1347 Sub 27. One female lent by Dr. C. Gordon Hewitt with data "Aylmer, Que. 31–V–1903. W. Metcalfe."

Lot 1348 Sub 2. Two females lent by Prof. C. P. Gillette, one with data "*Livia vernalis* Fitch var. Colo. 388. Trinidad, Colo. 5–14–92. C. P. G." The other with data "Colo. 1624, 6–4–94. Ft. Collins. C. P. G."

Lot 1348 Sub 60. One specimen lent by Prof. C. P. Gillette with data "Antonito, Col. 8–5–99. Dry ground. C. P. G."

Lot 1440 Sub 1. Four specimens lent by Dr. W. E. Britton with data "*Livia vernalis*, North Haven Ct. 15th July, 1910. B. H. Walden."

LITERATURE.

1851 Fitch, Asa., Catalogue with references and descriptions of the Insects collected and arranged for the State Cabinet of Natural History, p. 64. Original description "Found in spring in vessels of sap of the sugar maple."

1879 Thomas, C., Third Report (Ill. Eighth) p. 14. Described. Adults recorded on pine most of the year.

1884 Riley, C.V. Proc., Biol. Soc.Wash.Vol. 2, p. 68. *Livia vernalis* Fitch (*Diaphia femoralis* Fitch) (*calamorum* Fitch).

1890 Packard, A. S., Forest Insects, p. 803. Description after Fitch. Listed for pine.

1890 Provancher, L., Faune Entomolog. du Canada et partic. de la prov. de Québec. Hemiptères. p. 307. *Livia saltatrix* new species.

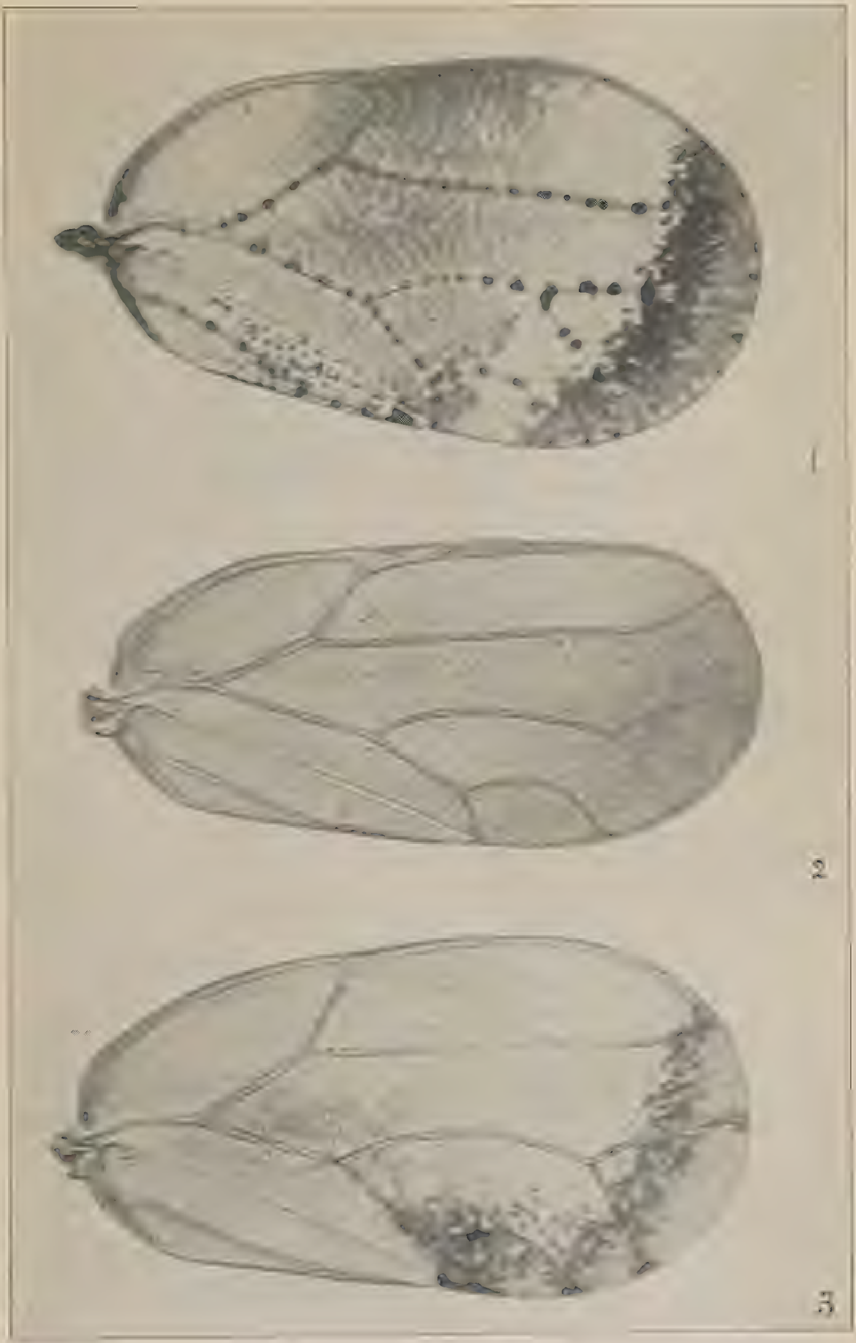
1893 Riley, C. V., in Lintner IX, p. 411.

1894 (1895) Mally, C. W., Proc. Iowa Acad. of Sci. for 1894.

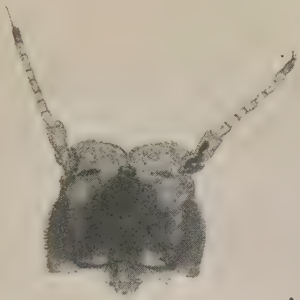
1909 (1910) Smith, J. B., Insects of New Jersey. "Common throughout the eastern United States on *Juncus sp.;* imago in winter on pine."

Livia marginata sp. nov.

A single male specimen collected at Colebrook, Connecticut, 21st of July, 1905, by H. L. Viereck apparently needs a name. The species is probably close to *maculipennis* and the cauda resembles that of that species. The head as is evinced by the front margin and the basal segments of the antennæ is more like that of *vernalis*. The wing is of the same general type as *maculipennis* though it is conspicuously different in that it lacks the dark spots on the veins. The deep smoky band at the wing tip extends in the specimen at hand from Cu^2 to R^s which as will be seen by referring to the figures is different from the space darkened in *maculipennis*. Lot 1440 Sub 2. Figs. 3 and 7 show the wing and head of this species.



PATCH—PSYLLIDÆ: *LIVIA.*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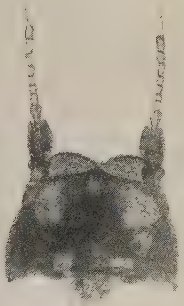
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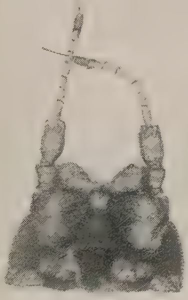
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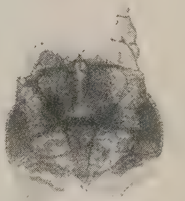
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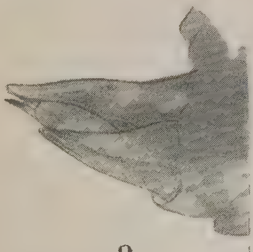
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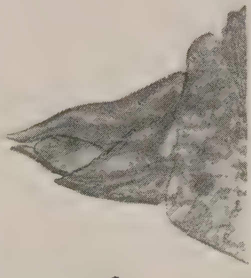
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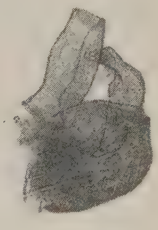
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PATCH—PSYLLIDÆ: *LIVIA.*

FOUR NEW MYRMECOPHILOUS COLEOPTERA.

By H. C. Fall,

Pasadena, California.

The following brief paper is offered primarily for the purpose of making known a most remarkable Rhyncophorous myrmecophile recently discovered in Arizona by Mr. Wm. M. Mann. Opportunity is taken however to describe three other myrmecophilous novelties, two sent me by Mr. Mann, the other found by myself in California. Two of the four species are notable, in that new genera must be erected for their reception.

Liometophilus gen. nov. (**Curculionidæ**).

Body narrow, costate, and clothed with non-contiguous appressed, and short stout erect, scales. Head evenly convex; eyes small, coarsely granulated, completely uncovered and separated by five or six times their own width as seen from the front. Beak shorter than the prothorax, subequal in length to the front thighs, moderately stout, feebly evenly arcuate, gradually feebly narrowed to the antennal insertion (as viewed from the front), the tip a little expanded. Antennæ inserted at apical 2/5, scrobes lateral, continued beyond the point of insertion to the apex, scape not quite reaching the eye; funicle 6-jointed, first joint obconic; nearly twice as long as wide, second narrower and a little shorter, 3–6 subequal in length, gradually wider, each a little shorter than the second, the sixth as wide as long; entire funicle and club pubescent, the latter ovate pointed, as long as the three preceeding joints and feebly annulate in outer half. Prothorax longer than wide, dorsum strongly produced over the head, disk bicostate from the front margin to a strongly elevated submedian transverse ridge which extends from side to side and is abruptly almost vertically declivous behind. At the bottom of the declivity is a transverse impressed line each side, behind which the surface becomes convex. Elytra elongate, wider than the thorax, sides broadly arcuate, humeri distinct, apices separately rounded, disk with rows of rather coarse punctures, the second, third, fifth and seventh interspaces costiform and bearing a series of stout erect scales. Pectoral channel deep and wide, extending into the mesosternum, the margin of the recess broadly flaring and prominent. Mesosternal epimera narrowly attaining the prothorax, gradually wider posteriorly, the episterna not reaching the elytral margin. Metasternum longer than the first ventral segment, side pieces narrowly exposed, the suture indistinct because of the vestiture. First, second and fifth ventral segments longer, third and fourth equal, each a little shorter than the second; first suture fine, broadly arcuate at middle; following sutures deep and straight. Legs moderate; claws simple.

Liometophilus manni sp. nov.

Dark brown, elytra with a subbasal and post-median transverse fascia in which the scales are paler; beak and prothorax finely granulose, each granule bearing a rounded appressed scale; beak also with numerous short, stout, erect scales. Prothorax with anterior margin reflexed, slightly notched at apex and bearing together with the discal and elytral costæ a single line of longer erect scales; disk of prothorax behind the transverse groove densely scaly and with a median impressed line. Elytra with rows of coarse punctures, somewhat as in *Areoschizus;* scales appressed except on the summits of the costæ. Legs clothed like the beak with appressed and short, stout, erect scales. Other characters as in the generic description, or in the figures. Length 3.5 mm.; width 1.2 mm.

Described from two examples taken by Mr. Wm. M. Mann, then of Stanford University, now at the Bussey Institution, Harvard University, Forest Hills, Mass. Mr. Mann writes me that the two specimens were found in runways of different nests of *Liometopum apiculatum* Mayr., Aug. 15, 1910, in Ramsey Canyon, Huachuca Mts., Arizona.

This very odd and interesting weevil is evidently a Cryptorhynch (Group Cryptorhynchi—Lec. & Horn Class.) but does not show close affinity to any genus known to me. Type in my collection; paratype in Mann collection.

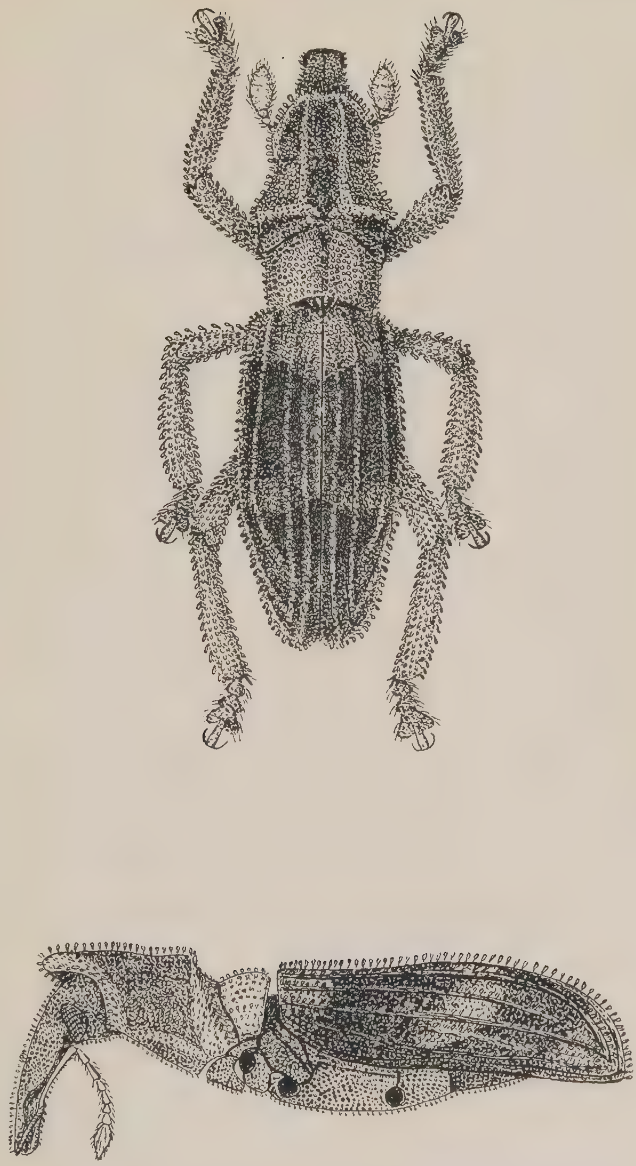
I am much indebted to Mr. A. B. Wolcott of the Field Museum of Natural History for the accompanying very characteristic figures (Plate 3). The eyes are drawn a little too large in the lateral view, as is also the antennal club in the dorsal aspect.

Lophioderus ovipennis sp. nov. (**Scydmænidæ**).

Elongate, entirely rufotestaceous, impunctuate; pubescence sparse, recurved. Antennae (♀) barely as long as the head and prothorax, the joints proportioned nearly as in *gracilis*. Head elongate, eyes much smaller than in *gracilis*, their diameter but slightly greater than the thickness of the basal joint of the antennæ. Prothorax distinctly longer than wide, widest at about the middle, form and sculpture as in *gracilis* except that the base and apex are more nearly equal, and the transverse basal impression is less distinct. Elytra nearly twice as long as wide, twice as wide as the prothorax, oval, widest at middle, sides obliquely narrowed to base, humeri completely wanting. All else as in *gracilis*. Length 1.65 mm.; width .55 mm.

Described from one of a series of specimens taken (IV–4–08) at Kendrick, Idaho, in nest of *Aphænogaster subterranea* var. *occidentalis* by Prof. A. L. Melander and sent me by Mr. Mann.

In its small eyes and obsolete humeri this species agrees best



FALL—*LIOMETOPOPHILUS MANNI.*

with the description of *myops* Csy., but that species is smaller and less elongate according to measurements given (length 1.35 mm.; width .6 mm.) the prothorax scarcely longer than wide, the transverse basal impression of the latter deeper than in *gracilis* and the color quite different.

I am not aware that beetles of this genus have been found with ants and it is possible that the association was in this case accidental; the small eyes and obsolete humeri may be significant and indicative of a more subterranean life.

Of the other species of this interesting genus, *biformis* Mäkl. occurs in Alaska (Queen Charlotte and Prince of Wales Islands), *arcifer* Csy., described from Astoria, Oregon, was found by Mr. H. S. Barber at Eureka in Northern California; *gracilis* is not rare about San Francisco Bay; *myops* is described from San Francisco.

Batrisodes aphænogastri sp. nov.

Red brown, polished, subimpunctate, sparsely finely pubescent. Closely in agreement in all general features and most details with the other members of the group to which it belongs. By Casey's table—Annals N. Y. Acad. Sci. VII, 1893, p. 469—it falls with *albionicus* and *zephyrinus*, being most nearly allied to the former, from which it is separable with certainty only by the pygidial characters of the female. In the male the pygidium is broadly evenly convex, in the female rather strongly tumid posteriorly as a whole, and with a small basal conical tubercle. The two small median prominencies at the base of the first dorsal segment of the abdomen are not appreciably produced backward as carinæ, and are mutually nearer together than either is to the inner line of the side margin. The median pronotal sulcus is feebly impressed, but detectable in basal half. Length 2.5 mm.; width .8 mm.

Kendrick, Idaho.

Described from one pair taken by Prof. A. L. Melander, in nests of *Aphænogaster subterranea* var. *occidentalis*, and sent me by Mr. Mann.

Xenomedon gen. nov. (**Staphylinidæ**).

Body rather broad and somewhat depressed, integuments densely punctuate and dull. Head subquadrate, eyes small; labrum quadridentate, the teeth acute, very nearly equal in prominence, the two middle ones a little more distant; gular sutures rather widely separated, most approximate before the middle; third joint of maxillary palpi oval, not quite twice as long as wide, apex broadly squarely truncate. Antennæ moderate, not appreciably wider distally, joints 1–10 feebly obconical, the first about twice as long as wide, wider than and subequal in length to the two following; 2–10 very gradually diminishing in length, the tenth a little wider than long. Neck about $\frac{2}{5}$ as wide as the head; prosternum strongly carinate, margins of ventral segments both above and beneath with a row of widely spaced porrect setæ, and on the lower surface with sparse erect or suberect discal setæ. Front tarsi short, slightly thickened; hind tarsi slender, nearly as long as the tibiæ.

Xenomedon formicaria sp. nov.

Ferruginous throughout or with the head and abdomen slightly darker. Head and prothorax very densely coarsely punctuate, the punctures in mutual contact throughout; elytra more finely and less densely punctuate; abdomen very finely and moderately closely so. Head subquadrate, just visibly widened behind, hind angles broadly rounded; eyes small, situated at about four times their length from the hind angles, their diameter about $\frac{2}{3}$ the length of the basal joint of the antennæ. Prothorax just perceptibly wider than the head, a little wider than long, sides feebly convergent posteriorly and with a short faint sinuation at middle; all the angles rounded. Elytra about $\frac{1}{4}$ longer than the prothorax, as long as wide or very nearly so, wider behind, distinctly impressed along the side margin giving a subexplanate appearance. Abdomen broad, sides arcuate, fifth segment as long as the two preceding, the sixth broadly, moderately deeply subtriangularly emarginate in the male. Length 2.9–3.5 mm.; width .7 mm.

Described from two males taken by the writer at Pasadena, California, Oct. 28 and Dec. 3, in nests of *Formica pilicornis*, beneath large stones.

Xenomedon will by Casey's table fall between *Platymedon* and *Caloderma*, but is by the characters given not very closely allied to any of the genera there recognized. The gular sutures are more widely separated than in *Platymedon*, and distinctly more distant in one of the two specimens than in the other.

A NEW PROSCOPIID GRASSHOPPER FROM PERU.

By A. N. Caudell,

Bureau of Entomology, U. S. Department of Agriculture,
Washington, D. C.

Epigrypa brevicornis sp. nov.

Most nearly allied to *E. curvicollis* from Ecuador but differs from that species, as well as from the third member of the genus, *E. variegata* from Colombia, in having a terminal spine above on the hind tibiæ on the outer side only, instead of the inner side, and in the antennæ of the female being shorter than the rostrum, instead of surpassing it.

Size moderate. Head as long as the pronotum, the basal part moderately broad but the apical portion from a distance before the eyes as great as the rostrum beyond them narrow, the rostrum slender and twice as long as the eye; the whole head is distinctly curved, the curvature being gradual and especially noticeable along the front of the head; eyes prominent, about twice as long as broad and situated beyond the middle of the head counting from the clypeal suture to the end of the rostrum; antennæ short, falling distinctly short of the tip of the rostrum. Pronotum nearly straight and slightly flattened, the prozona distinctly separated from the prosternum by a longitudinal ridge; the anterior margin is a little flaring and distinctly elevated, the edge subtuberculate; the mesonotum is wider behind than anteriorly and elevated into a transverse ridge surmounted by several pointed tubercles; metanotum with one moderately elevated tubercle at the middle of the hind margin. Abdomen unarmed, the surface rough and with a dorsal keel; upper valves of ovipositor long, the scoop occupying almost half the entire length; lower valves but little shorter than the upper ones. Legs moderate, the tarsi furnished with long, slender, apically expanded pads between the claws; hind femora slightly swollen, as common in the group and with a very small black short genicular spine on each side above; hind tibiæ without apical spines above on the inner margin but with one on the outer, beneath towards the apex with a few minute black spinules.

General color brown, probably more or less greenish in life.

Measurements: length, exclusive of head, 60 mm.; head, from lower part of mouth parts to tip of rostrum, 13 mm.; rostrum, beyond eyes, 4 mm.; eye, 2 mm.; antennæ, 3 mm.; pronotum, 13 mm.; fore femora, 9.5 mm.; middle femora, 8.5 mm.; hind femora, 21.6 mm.; hind tibiæ, 22 mm.; Width, head, across the eyes, 3 mm.; thorax, across mesothorax, 5 mm.

Type female, Piura, Peru, February, 1911. C. H. T. Townsend, collector. (Catalogue No. 14510, U. S. National Museum.)

A paratypic series of two males and eight females from the same locality has been examined, representing dates from February to September. The females show very little variation from the type specimen either in color, size or structure but the males have quite a different appearance, being much smaller and with a short rostrum. Structurally the male is similar to the female except the rostrum is much shorter, being shorter than the eye and elongate triangular in shape, the antennæ being comparatively longer than in the female, extending beyond the tip of the rostrum. The eyes are fully as large as in the larger female and are thus distinctly more prominent than in that sex. The supra-anal plate is triangular and the cerci are simple and extending to the tip of the plate. The subgenital plate is apical and subconical, extending considerably beyond the apex of the supra-anal plate. The male gives the following measurements: length, entire, tip of rostrum to end of abdomen, 42 mm.; head, mouth to tip of rostrum, 8 mm.; rostrum, beyond eyes, 1 mm.; eyes, 2 mm.; antennæ, 2 mm.; pronotum, 9 mm.; fore femora, 7 mm.; middle femora, 5.5 mm.; hind femora, 14 mm.; Width, head, across eyes, 3 mm.; thorax, across mesothorax, 3.5 mm.

Some of these specimens were taken feeding on mesquite bushes.

ON THE EARLY STAGES OF CERTAIN GEOMETRID SPECIES.

By Wm. Barnes, M.D., and J. McDunnough, Ph.D.,
Decatur, Illinois.

As the result of our breeding of Lepidoptera during the past two years we have accumulated a number of notes on the early stages. Finding that in several cases there is apparently nothing known of the life history, we venture to present these notes on Geometrid larvæ in the hopes that other workers may be stimulated to study in more detail these species. There is an extensive field open in the study of the early stages of our North American Geometridæ, Doctor Dyar being practically the only one who has published during the last ten years any articles in this particular line.

When one takes into account the ease with which most Geometrids will deposit eggs and the hardy nature of the larvæ we are surprised that not more is known of the early stages; as an instance we might cite that the whole of the *Eupethecia* group is practically unworked territory, or if work *has* been done nothing has been published, which is just as bad. The one difficulty in breeding from the egg is that there is often no record of the food-plant and the young larvæ perish miserably before the proper leaves can be found; we have found this the case with *Eucymatoge intestinata*, *Sciagraphia mellistrigata* and others; *Pero honestarius* has accepted wild cherry, but has never thriven, dying after the first moult. If collectors could but be induced to publish their observations concerning larval food-plants, even if they could not work out the life history themselves they would at least pave the way for some other worker and facilitate greatly the study of the early stages.

Dyspteris abortivaria H. S.

Ovum. Pale green, turning darker before hatching; duration of egg stage 8 days.
Stage I.

Head orange-brown; body pale yellow green, cylindrical; prothorax with two sharp conical protuberances on anterior margin, somewhat resembling a dog's ears. Length 3 mm.

Stage II.

Head slightly yellowish; body smooth, shiny, cylindrical, green, with prothoracic "ears" sharply pointed. Length 6 mm.

Stage III.

Very similar to preceding stage; traces of reddish on dorsum and rear segments; faint red dorsal and subdorsal spots at the junction of segments. "Ears" very prominent, tinged with red. Length 12.5 mm.

Stage IV.

Head small, well hidden by prothorax which is squarely built with "ears" drawn out into two sharp points; body cylindrical, green, tinged with rose, which color increases gradually towards the anal segments, until it becomes the prevailing color; anterior margin of prothorax rose; three rose-colored dots on posterior portion of each segment dorsally. Length full grown 30 mm.

The larva spun up but failed to pupate.

Food plants. Ampelopsis; Vitis.

Eupithecia miserulata Grt. (*teste* Grossbeck).

Ovum. Oval, flattened slightly at micropylar end, 4 mm. long; when first laid pale yellow, later light orange. The whole surface of egg is faintly sculptured with irregular hexagons. Duration of egg stage about 6 days.

Stage I. May 18th.

Head black; body muddy green, slightly lighter laterally. Length, after feeding a day, 3 mm.

Stage II. May 23d.

Slender, cylindrical, tapering anteriorly; dull yellowish-green, skin granulated; a broad red dorsal stripe tending to diamond-shaped enlargements in centre of each segment; traces of a red subdorsal line on first two segments and a narrow lateral line of similar color. Legs black. Length 5 mm.

Stage III. May 26th.

Pale whitish, markings as before but rather clearer. Length 9 mm.

Stage IV. May 30th.

Head small, flat, whitish, with sparse hairs; body tapering anteriorly, rather flat with prominent lateral fold; skin somewhat granulate, whitish; a narrow reddish dorsal line, and a broad dorsal arrow-shaped mark with apex pointed forward and resting on dorsal line on first five abdominal segments; 6th abdominal with very small arrow-mark; other segments without; a brownish-red subdorsal line, distinct on thoracic segments, very faint on abdominal, where it forms a lateral boundary to the dorsal arrow-marks; a red stripe below lateral fold of skin; ventrally whitish; claspers white. Length full grown 18 mm. Pupation on surface of earth in slight web on June 4th.

Pupa. Whitish with legs, antennæ, and veins on wing cases marked distinctly in black. Emerged June 16th.

Food plants. Our larvæ were fed up on the flowers of dandelion. We discovered similar larvæ later on willow and wild cherry, which, however, did not reach the imaginal stage.

Percnoptilota fluviata Hbn.

The larval stages of this species have already been recorded by Doctor Dyar (Psyche 1899, p. 429). Larvæ reared from ova by us offer considerable differences to those described by Doctor Dyar; we therefore publish our notes for the sake of recording the larval variation.

Ovum. Pale yellow when first laid, turning later darker; oval, with flattened micropylar end; faintly sculptured with regular hexagons. Length .5 mm. Duration of egg stage 7 days.

Stage I.

Entirely dull greenish black, head slightly reddish. Length 2 mm.

Stage II.

Head slightly reddish; body greenish white with faint traces of geminate dorsal and subdorsal lines; abdominal segments with rather diffuse lateral purplish patches. Length 6 mm.

Stage III.

Head light greenish, mottled with reddish. Body green with geminate light yellow dorsal stripe tending to diamond-shaped enlargements on segmental incisions; two dorsal yellowish lines; lateral portions tinged with reddish-purple which on abdominal segments forms indistinct transverse bands across the body at junction of segments, lateral portion usually contains a dark streak. Beneath yellowish-green. Length 9–10 mm.

Stage IV.

Color and markings very variable—green to reddish brown, head whitish, striped and sprinkled with reddish; indistinct geminate dorsal and subdorsal stripes; the abdominal segments are crossed by 5 purplish intersegmental bands, most distinct in the green larvæ; laterally these bands are often terminated by a blackish longitudinal dash. Tubercles small, white; claspers usually marked with purplish. Beneath segmental divisions frequently marked with yellow. Length 19 mm.

Food plant, Rumex.

Tornos scolopacinarius Gn.

Stage I.

Head deep brown, sprinkled with white, slightly broader than first segment. Body brownish-black, cylindrical, granulate in appearance, anterior margin of prothorax white; traces of white subdorsal, lateral, and spiracular lines. On abdominal segments II, III and IV the tubercles are large, semiconical, and white, forming to the casual glance an almost continuous white transverse band across segment; on segment III the dorsal tubercles coalesce, forming a single conical black wart arising from a white base; other tubercles small, whitish, with black setæ. The ventral surface is studded with white tubercles. Length 1.6 mm.

Stage II.

Head and body deep brown, former small, slightly retractile, sprinkled with white and with two creamy stripes on posterior portion. Body wrinkled in appearance, thickly sprinkled with whitish or light brown granules, with black dorsal line and traces of creamy subdorsal stripes. Dorsally on abdominal segments II, III and IV, a pair of conical protuberances, tipped with creamy, those of III uniting to form a large single wart; on these segments the lateral tubercles are also prominent and heavily marked with cream-color, sustaining the appearance of the white transverse bands of the previous stage. Beneath darker than above. Length 4 mm.

At rest the larva assumes a curved position similar to a question mark, with the head just removed from the twig or leaf, and when disturbed will keep up a swaying motion from side to side for a considerable length of time.

Stage III.

Very similar to previous stage; dorsal tubercles all conical, small, except those of 2d, 3d, 4th and 8th abdominal segments, that of III being largest, single, formed by junction of two dorsal tubercles. Slightly waved subdorsal and lateral lines, and a much waved spiracular line which forms oblique stripes on abdominal segments 2–6, extending upwards as far as the lateral line; a dorsal dark line formed by the lack of white granulations on this portion of the body; lateral warts of II, III and IV abdominal all more or less tinged with creamy. Beneath with medio- and subventral lines. Length 6.3 mm.

Full grown (*Stage V?*).

Head and body reddish-brown to deep brown, granulate in appearance; body cylindrical, thoracic segments rather swollen; tubercles I of abdominal segment III unite to form a conical wart, inclined rather towards rear, and bifid at its apex; tubercles of segments II, IV and VIII small, conical, separate, but larger in comparison than the same tubercles of the remaining segments; all other tubercles minute. An indistinct dark dorsal stripe, and an irregular subdorsal one, bordered laterally with yellowish and tending to form V shaped marks on central abdominal segments, the apex of the V pointing backwards; in dark colored specimens these markings are almost obsolete. A light yellow spiracular stripe, straight on the thoracic segments, indistinct on first abdominal, broken and forming 5 oblique upwardly inclined stripes on the following segments, lacking on rear segments; these oblique pale stripes are bordered dorsally with blackish shades, the last of which continues as a lateral dark stripe to the anal segment. Beneath as above with a broad dark subventral stripe. Spiracles pale, rimmed with black. Length 20 mm.

Food plant, Aster.

Ectropis crepuscularia D. & S.

The early stages of this species are doubtless well known in Europe. We know of no account of the life history of the American form. It may prove interesting for the sake of comparison.

Ovum. Pale green, smooth, oval, laid in batches under slight covering of wool. Hatches in 7 days.

Stage I.

Black with a double row of white dorsal spots, consisting of two on anterior and two on posterior portion of each segment, and a broad irregular white lateral stripe. In later stages the larva turns dull purplish-brown. Length 2 mm.

Stage II.

Head light brown, marbled over with darker streaks and dots; body dorsally, olive-brown to black, ventrally, black; four whitish dorsal lines, the central two of which show traces of the dots of previous stage in slight enlargements at anterior and posterior portions of segment; a thin white lateral line followed ventrally by white segmental blotches; on second abdominal segment a black lateral patch. All marking more or less obsolete towards posterior end.

Stage III.

Head brown, rather square, with darker markings; body light brown, shaded with black, especially on central abdominal segments, traversed by a series of longitudinal stripes of a lightish yellow color; a prominent black oblique patch on 2d abdominal segment; slight elevation on 8th abdominal segment, edged with oblique black stripe; no trace of white dorsal dots or lateral stripe; first pair of prolegs with broad white stripe.

Stage IV.

Very variable in color; head yellowish, sprinkled and marbled with red-brown and with black stripes at apical portion of clypeus; body usually red-brown, often dull ochreous, marbled and lined with dark and light shades; the most constant features are a black velvety lateral patch on second abdominal segment and yellowish stripe on first pair of prolegs; traces of whitish dorsal stripe and geminate black lateral band are present, and often a wavy yellowish lateral line is apparent; fleshy protuberance on 8th abdominal segment with lateral black shading; tubercles small, black. Beneath darker than above. Length 16 mm.

Stage V.

Head as before; mesothoracic segment swollen; black patches of 2d abdominal segment lacking; ground color deep red-brown, shaded with black; geminate black dorsal stripe more or less distinct, tending to spread apart and enclose white spots on posterior portion of segments; double black lateral stripe, most prominent on anterior portion of body; black oblique mark on side of fleshy protuberance of 8th abdominal segment, yellow stripe on first prolegs. Beneath dark smoky brown, with traces of yellow median line. Spiracles yellow with black rim; tubercles black. Length 25 mm.

Food plants. Various trees and shrubs.

Metanema determinata Wlk.

Ovum. Pale green, turning later yellowish white with numerous orange dots and stripes; oval, twice as long as broad, smooth or very slightly pitted. .8 by .4 mm.

Stage I.

Head flesh color with broad lateral dark-red stripe, continued over prothorax. Body whitish green with a broad red dorsal stripe and lateral stripes of a similar color continued down sides of first pair of prolegs; tubercles and setæ minute. Legs reddish. Length 4 mm.

Stage II.

No change from previous stage; general color whitish. The stripes in advanced stages turn deep brown. Length 7 mm.

Stage III.

Head white, flat, narrowed posteriorly with broad dark-brown lateral stripe and dorsal V-shaped mark. Body whitish green with broad brown dorsal and lateral stripes; a subdorsal stripe, the continuation of the stripe on head, is distinct on first two segments, indistinctly wavy on others. On 2d and 3d abdominal segments traces of brown shading between subdorsal and lateral lines; traces of a thin, waved, spiracular line; first pair of prolegs brown; anal claspers with brown stripe on anterior margin. Length 9 mm.

In late stages the dark dorsal stripe tends to disappear, the ground color becomes brown to brownish yellow and numerous light longitudinal striæ appear, leading to the markings of the following stage.

Stage IV.

Head flesh-color, marbled with brown, with broad brown lateral stripe. Body light ocher, strongly mottled and marbled with brown. Markings indistinct and diffuse, consisting of numerous longitudinal lines of which a light subdorsal one is most prominent. A broken geminate dorsal black line is present on anterior and posterior segments; the central segments are shaded laterally with black, and a faint white supraspiracular stripe is visible; the lateral black band of the preceding stages lies beneath the spiracular fold and is continued down the anterior margin of the anal claspers, edged with whitish ventrally; tubercles II of abdominal segments black, not prominent. Ventrally whitish with 4 brown longitudinal lines. Legs white, slightly mottled with brown, prolegs considerably more mottled. Length, full grown, 22 mm.

Food plant. Willow.

Metanema quercivoraria Gn.

Ovum. When first laid dirty green, turning soon red-brown, shiny, regularly sculptured with an hexagonal design, the lines composing which are slightly raised; in shape oval, considerably flattened at the micropylar end. Length 8 mm. Duration of egg stage 12 days.

Stage I.

Very slender in shape. Head light brown. Body whitish green to light brown, lighter towards posteroir end; a lateral row of 7 or 8 small black dots, one situated near the posterior margin of each abdominal segment. Length 5 mm.

Stage II.

Head pale reddish, as broad as prothorax. Body very slender, pale green, becoming lighter towards anal extremity and marbled laterally with dark brown on first two and last three segments; a lateral row of 8 black dots, commencing on metathorax and situated near hind margin, on abdominal segments posterior to the spiracles; a brown lateral line, sometimes broken, often continuous. Length 9 mm.

Stage III.

Head pale green, marbled strongly with brown and with reddish-brown lateral patch. Body pale green with faint traces of dorsal and subdorsal lines; a broad purplish lateral stripe most marked on anterior and posterior segments where it is broadest and marbled with white; black lateral spots as in previous stage; tubercle

II on abdominal segments III, IV, V and VI prominent, black. Beneath green with a pair of small black warts on the rear of abdominal segments. Length 16 mm.

Stage IV.

Head yellowish marbled with brown. Body green or yellow-green, in some cases much marbled with brown; lateral purple stripe prominent only on anterior and posterior segments where it is marbled with white; black lateral dots as before; black dorsal tubercles also present, especially prominent on abdominal segment III, where they form more or less raised warts; claspers striped with purplish, being the continuation of the lateral stripe. Two small black tubercles on posterior margin of segments underneath. Length 25 mm.

Stage V.

Very variable in ground color and markings. The majority have pale green head, marbled with brown; body olive green with no traces of stripes; mesothorax swollen, with reddish-purple lateral wart, shaded inferiorly with lighter, this color being continued forward to the head. Third abdominal segment with two prominent dorsal red-brown warts, more or less confluent, and two lateral ones, all situated on posterior portion of segment; similar dorsal warts on 6th abdominal. Rear segments shaded with purple brown; lateral dots of previous stages almost or wholly lacking; tubercle II of abdominal segments also much less marked with black. Beneath green with two reddish warts in medio-ventral region of 2d abdominal segment.

Other larvæ are generally much browner in appearance, due to geminate dorsal, subdorsal and lateral lines filled in with brown, but much broken and irregular. Beneath markings of dorsal surface repeated; all tubercles and warts more prominently marked than in the green form of larva; tubercles frequently arise from a small white patch, being themselves black; tubercle II of 4th and 5th abdominal segments often reddish, more or less prominent. Length full grown 37 mm.

Pupa. Light brown, strongly marked with olivaceous and darker shades of brown; antennæ and leg sheaths darker; wing cases with numerous small grooves, giving a general sponge-like appearance. Spiracles dark brown; segmental incisions banded with dark brown; cremaster with two strong hooks.

Food plant. Quercus.

The species is double-brooded, the first specimen emerging 52 days from date of oviposition.

A NEW SPECIES OF *PSELLIOPUS* (*MILYAS*).

By Wm. T. Davis,
Staten Island, New York.

While in quest of insects in the country to the west of Beltsville, Prince George Co., Maryland, on September 26, 1911, with Mr. Frederick Knab and Mr. Clarence R. Shoemaker, I observed that the specimens of *Milyas* or *Pselliopus* that I saw were unusually orange in color. They were also quite plentiful and a pair was observed in copulation. Upon comparing the specimens collected with the darker colored *Pselliopus cinctus* Fabr. in my collection from Long Island, N. Y.; New Jersey; Pennsylvania; Virginia and Washington, D. C., it was observed that, in addition to color differences, the humeral angles were not the same. I communicated these facts to Mr. Harry G. Barber, who has been my chief guide in things Hemipterous, and he has kindly given the insects more study and has pointed out some other differences. The description of *cinctus* by Fabricius will cover both species, but we may consider it to be the darker and somewhat smaller form. From this, the new species which I take pleasure in naming after my friend, may be separated as follows:

Pselliopus barberi sp. nov.

Color. Anterior lobe of pronotum with black markings usually absent or reduced to two faint oblique streaks at anterior portion. Posterior lobe marked as in *cinctus.* Scutellum with no prominent black markings, which are either absent entirely or reduced to a small spot or to two faint oblique bands at extreme anterior part between the two whitish pruinose spots. Corium unmarked with black; orange yellow. Connexivum banded with black as in *cinctus.* Venter with black markings arranged much the same, but considerable variation occurs in both species. Markings of the legs, rostrum and antennæ are similar, but the head has less amount of black maculation in *barberi.*

Structural differences. In *cinctus* the short, black tipped, acute spine, before the rounded humeral angle projects beyond the humeri and is directed slightly backward, while in *barberi* the black tipped spine preceding the humeral angle, is shorter, more obtuse and directed more laterally. It never extends beyond the humeral angle. Basal margin of the pronotum in front of the scutellum is feebly bisinuate in *cinctus,* while in *barberi* it is straight across. Scutellum of *barberi* is not so foliaceus and flat as in *cinctus* and a well defined ridge or keel runs backward from the transverse crescentic ridge. Apex of last genital segment of male with a very short, blunt erect spine in *cinctus.* Last genital segment of male in *barberi* armed with a long very pointed simple spine, which is directed obliquely forward and somewhat concealed. The inner genital lobes on either side of this are not produced in *barberi* or in *cinctus* as in *zebra.* In *zebra* the apex of the last genital segment of male is produced in the middle and armed with a sulcate pointed spine.

In addition to the type locality mentioned above, specimens of *barberi* have been examined from Great Falls, Va., Langdon, Mo., Kansas, and Austin, Tex.

SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY.

The Second International Congress of Entomology will be held at Oxford, England, from August 12th to 17th, 1912. Futher particulars will be announced shortly. The executive committee proposes to find for members of the congress lodgings in the town, or in rooms in one of the colleges at a moderate charge; rooms in the colleges will be available only for men. The executive committee invites an early provisional notice of intention to join the congress, in order to make the arrangements for the necessary accommodation. The proceedings of the First Congress have just been published.

All communications and inquiries should be addressed to Malcolm Burr, Esq., care Entomological Society of London, 11 Cavendish Square, London, W., England.

Henry Skinner,
Member Permanent Executive Committee representing America.

THE WASHINGTON MEETING OF THE ENTOMOLOGICAL SOCIETY OF AMERICA.

The sixth annual meeting of the Entomological Society of America was held in Room 376 of the new United State National Museum Building on Tuesday and Wednesday, December 26 and 27.

The following papers were read:

Herbert Osborn.—Faunistic studies in entomology.

E. P. Felt.—Numerals as aids in classification.

E. S. Tucker.—Studies of insects bred and collected from the American mistletoe. Presented by Andrew Rutherford.

H. C. Severin.—The influence of temperature on the moulting of the walking-stick, *Diapheromera femorata.* (Title only.)

R. Matheson and C. R. Crosby.—Notes on aquatic Hymenoptera. Presented by C. R. Crosby.

Ann H. Morgan.—Photographs illustrating the life histories of May-flies.

H. Y. Tsou.—The Chinese wax-scale.

A. D. MacGillivray.—The lacinia in the maxilla of the Hymenoptera.

Lucy Wright Smith.—Glycogen in insects, especially in the nervous system and the eyes.

J. A. Nelson.—Note on an abnormal queen bee.

J. Chester Bradley.—The designation of the venation of the hymenopterous wing.

Ann H. Morgan.—Homologies in the wing-veins of May-flies.

A. D. MacGillivray.—The pupal wings of *Hepialus thule.*

J. Chester Bradley.—The wing venation of chalcid flies.

F. M. Webster.—Our present educational system in relation to the training of economic entomologists.

C. W. Johnson.—The use of color in designating types and varieties.

Leonard Haseman.—Entomological work in Missouri.

Herbert Osborn.—A problem in the flight of insects.

E. P. Felt.—The biology of Miastor and Oligarces.

P. P. Calvert.—Seasonal collecting in Costa Rica.

W. L. W. Field.—Hybrid butterflies of the genus *Basilarchia.*

The following papers were read by title only, because of the expiration of the time allowed for the reading of papers:

O. A. Johannsen.—Cocoon-making by *Bucculatrix canadensisella.*

J. G. Needham.—Some adaptive features of Myrmeleonid venation.

E. H. Strickland.—The Pezomachini of North America.

Z. P. Metcalf.—Homologies of the wing-veins of Homoptera Auchenorhynchi.

The following officers were elected for 1912:

President, S. A. Forbes; First Vice-President, A. D. Hopkins; Second Vice-President, C. P. Gillette; Secretary-Treasurer, A. D. MacGillivray; Additional members of executive committee, J. H. Comstock, John B. Smith, Henry Skinner, Herbert Osborn, E. D. Ball, P. P. Calvert; Member of committee on nomenclature for three years, H. T. Fernald.

The Society adjourned, to meet with the American Association for the Advancement of Science, at Cleveland, Ohio, January, 1913.

Alex. D. MacGillivray,
Secretary-Treasurer.

SECOND VOLUME

Illustrations
OF
Diurnal Lepidoptera

WITH DESCRIPTIONS
BY
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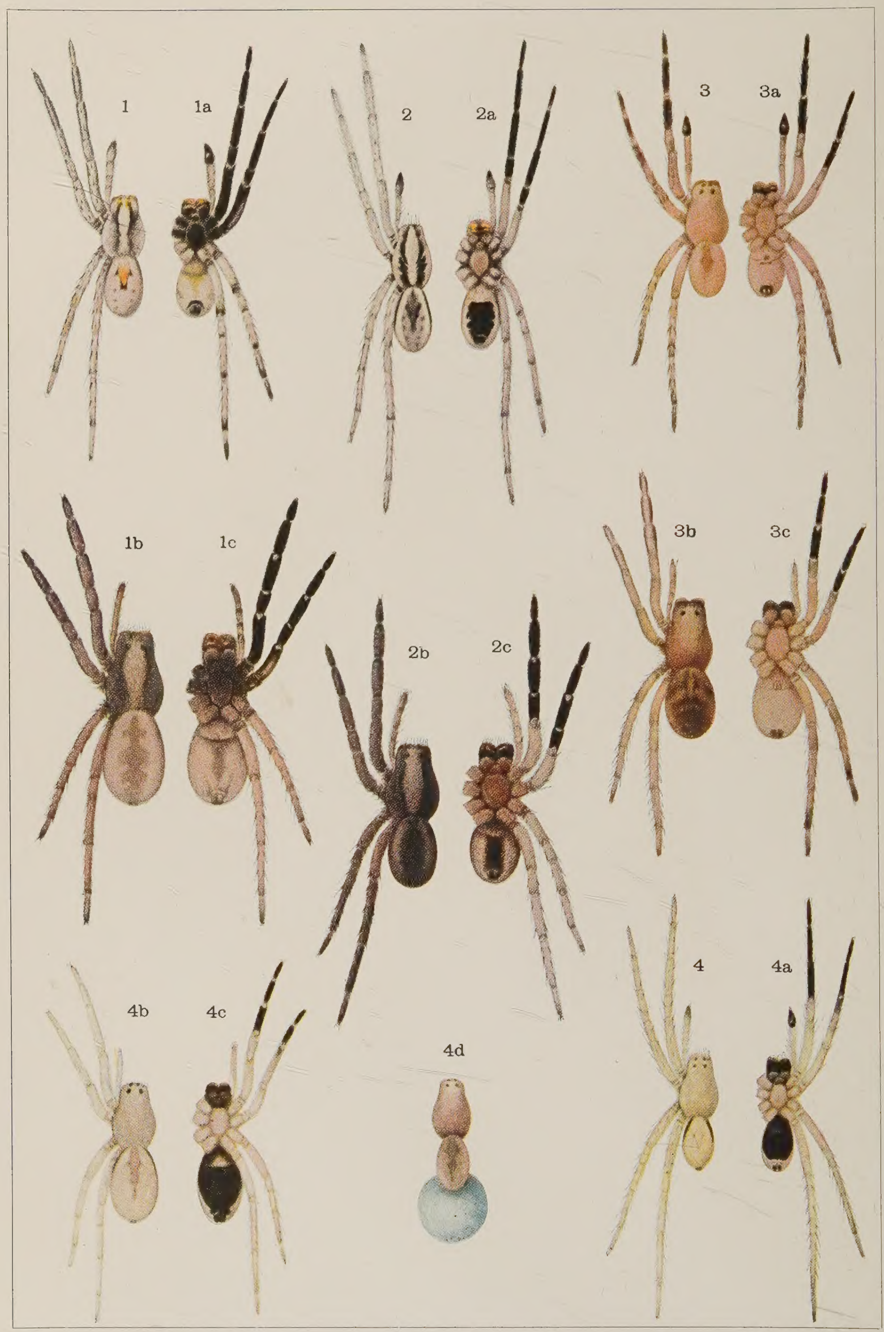

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